Universal Tachometer TDP-3621
Operation Manual

Thank you very much for buying and using universal periomatic TDP-3621 of COCORESEARCH INC. Please read the manual thoroughly before using the device.

Precautions on Use:

Warning

- Be careful that your body, cables or others items may not caught in rotating objects.
- A secondary damage may occur due to malfunctioning of the device.

Attention

- Observe the ratings.
- Always use specified power supply.
- The device could be vulnerable to strong electric or magnetic fields.
- Don't immerse the product into liquids like water, oil, and petroleum or apply them to it.
- Don't apply the external bias to the sensor and also don't short circuit the positive bias with the ground terminal.
- Don't disassemble or modify the product.

Attention

- Don't drop or bump the product against other objects.

1. General Description

The universal tachometer accepts input signals from rotary encoder or flow sensor etc and functions as rotation meter, flow meter, speed meter, and frequency meter.
In optional functions it offers analog, comparator, digital, and BCD output.

2. Manufacturing Type

TDP－3621－□□□

Options:
E:Analog output + RS232C
EM:Analog output(M3 Terminal Block)
C:Conparator output
P:BCDoutput (open collector)
T:BCDoutput (ＴＴＬ)
S:RS-485communication
B:Main unit(without optional functions)

Main unit power supply
A:AC 100-240V ±10%(50Hz/60Hz)
D:DC12-48V ± 10%

Optional Function Chart:

Type	analog output	RS-232C	comparator output	BCD output open collector	BCD output (TTL)	RS-485 communication
E	○	○				
EC	○	○	○			
EP	○	○		○		
ET	○	○			○	
EM	○					
EMC	○		○			
EMP	○			○		
EMT	○				○	
C			○			
CP			○	○		
CT			○		○	
CS			○			○
P				○		
PS				○		○
T					○	
TS					○	○
S						○
B	Basic tachometer (no optional) functions					

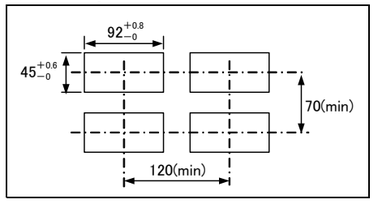
3. Confirmation of Accessories

After unpacking the product please confirm the below mentioned accessories are included. If some thing is missing or damaged, contact your dealer or our Sales Department immediately.

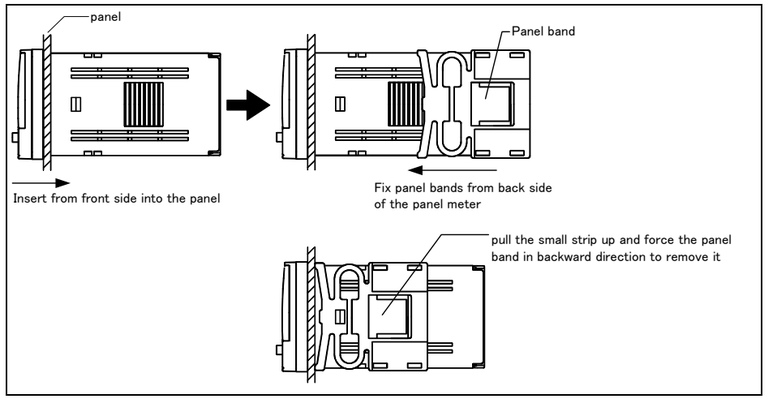
① Instruction manual (this manual):1 copy1
② Panel mount band: 2 2
③ Unit seal: 1 1
④ BCD output connecter (type 8822E-036-171: 1 (KEL connectors)
　＊ Only BCD output user will get this item.
⑤ Tin (Sn) coated wire (please use in terminator)
　＊ Only RS-485 user will get this item.

4. Adjustment with Panel Meter

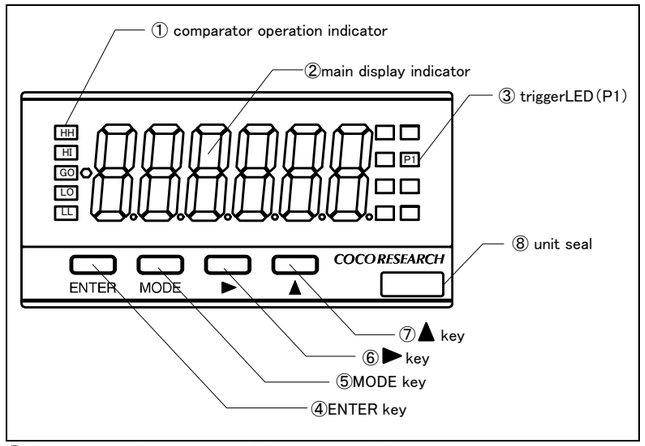
(1) Cut the panel in 45H X 92W dimensions to mount TDP-3621 as shown.



Recommended panel thickness is 0.8mm ～ 5mm.
(2) Insert TDP-3621 into the panel from the front side without mounting bands.
(3) Fix the mounting bands with TDP-3621 from the backside.



5. Parameters and Operations



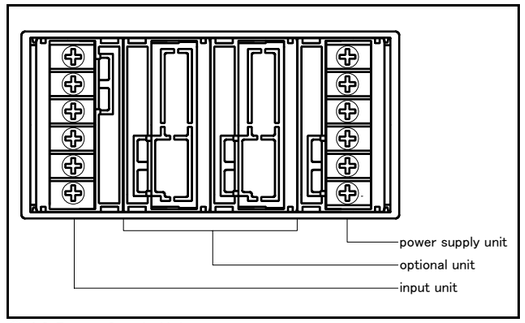
① Comparator Indicator..... It is comparator indicator.
　HH , HI , LO , LL : Red LED　　GO : Green LED
② Display Indicator..... It is 6 digit LEDdisplay with red or green color options.
③ Trigger LED (P1) ..... Blinks when input signal enters. If the frequency of the signals is very high it lights up.
④ ENTER KEY..... Used to confirm the setting value and to enter into the next program guide number.
⑤ MODE KEY ..... Used to enter into the program mode or cancel any undesired setting value before confirmation.
⑥ ▶ KEY ..... Used to select any display digit value and to move to the next guide no.
⑦▲ KEY ..... Used to change the setting value of the blinking digit and back selection of the guide number.

6. Terminal Functions

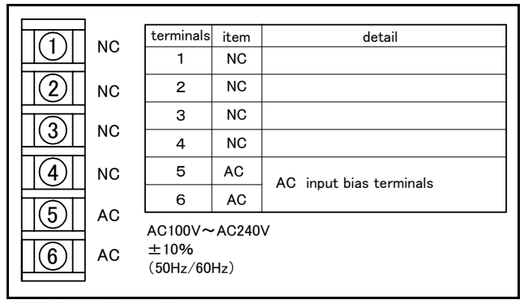
Warning　Switch off the power supply every time while performing connections and wiring works otherwise you may receive an electric shock or the equipment may damage.

Attention　Before turning on the power supply make sure that all connections, power supply, and sensors are connected in right order.

Attention　Use the recommended I/O signal cables to avoid the malfunctioning from external noise. Moreover, please combine and use the line driver and the line receiver when the noise influences the long distance transmission and the transmission course.



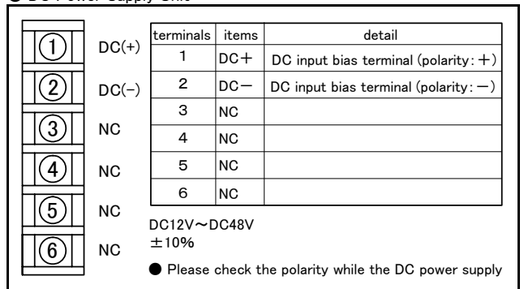
● AC Power Supply Unit



terminals	item	detail
1	NC	
2	NC	
3	NC	
4	NC	
5	AC	AC input bias terminals
6	AC	

AC100V～AC240V
±10%
(50Hz/60Hz)

● DC Power Supply Unit

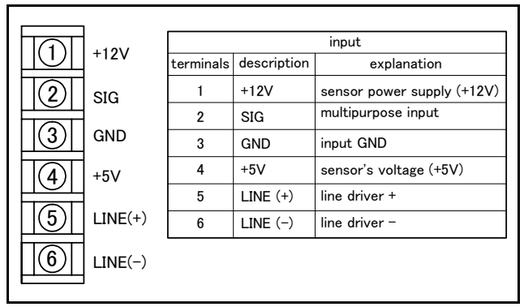


terminals	items	detail
1	DC＋	DC input bias terminal (polarity：＋)
2	DC－	DC input bias terminal (polarity：－)
3	NC	
4	NC	
5	NC	
6	NC	

DC12V～DC48V
±10%

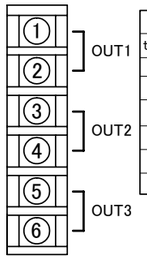
● Please check the polarity while the DC power supply

● Input Unit



input		
terminals	description	explanation
1	+12V	sensor power supply (+12V)
2	SIG	multipurpose input
3	GND	input GND
4	+5V	sensor's voltage (+5V)
5	LINE (+)	line driver +
6	LINE (−)	line driver −

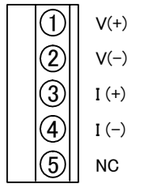
● Comparator Output Unit (TDP-3621-C)



comparator		
terminals	description	explanation
1	OUT1	No polarity
2		
3	OUT2	
4		
5	OUT3	
6		

● Analog Output/RS-232 CUnit (TDP-3621-E)

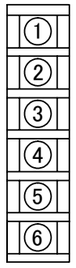
RS-232C(modular connector:RJ-11)		
Terminal	Terminal name	Remarks
1	TXD	output tramsmitted data
2	RXD	input recieved data
3	NC	
4	S.GND	signal GND



Analog Output (Terminal Block)		
Terminal	Terminal name	Remarks
1	A.OUT(V+)	voltage output +
2	A.OUT(V−)	voltage output −
3	A.OUT(I+)	current output +
4	A.OUT(I−)	current output −
5	NC	

Current and analog voltage option cannot be used as the same time.

● Analog Output M3Terminal Block Unit (TDP-3621-EM)

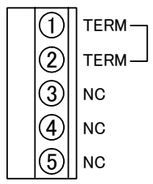


Analog Output (M3 Terminal Block)		
terminals	description	explanation
1	A.OUT(V+)	voltage output +
2	A.OUT(V−)	voltage output −
3	NC	
4	A.OUT(I+)	current output +
5	A.OUT(I−)	current output −
6	NC	

Current and analog voltage option cannot be used as the same time.

● RS-485 Unit (TDP-3621-S)

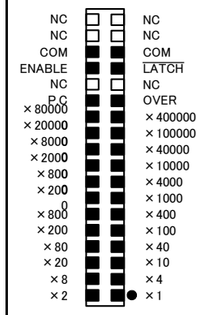
RS485(modular connector:RJ-11)		
Terminal	Terminal name	Remarks
1	S.GND	signal ground
2	NC	
3	DATA(−)	data input and output
4	DATA(+)	



RS485(Terminal block)		
Terminal	Terminal name	Remarks
1	TERM	terminal resistance setting
2	TERM	terminal resistance setting
3	NC	
4	NC	
5	NC	

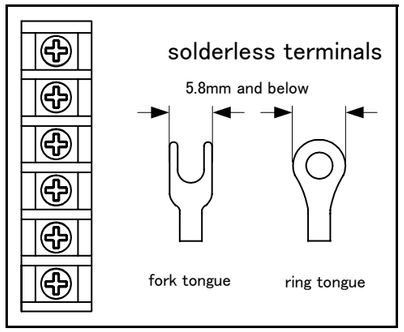
Terminator is ON when you short the terminal ①-② and internal resistance of the terminator becomes 200Ω.

● BCD (Open Collector/TTL) Unit (TDP-3621-P/T)

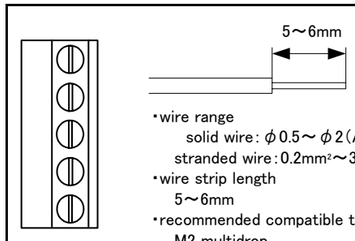


backup (please do not use it.)	NC	36	35	NC	backup (please do not use it)
	NC	34	33	NC	
common	COM	32	31	COM	common
BCD enable control	ENABLE	30	29	$\overline{\text{LATCH}}$	data LATCH signal input
backup (please do not use it.)	NC	28	27	NC	backup (please do not use it.)
BCD print control	P.C.	26	25	OVER	overflow output
BCD data output	× 800000	24	23	× 400000	BCD data output
	× 200000	22	21	× 100000	
	× 80000	20	19	× 40000	
	× 20000	18	27	× 10000	
	× 8000	16	15	× 4000	
	× 2000	14	13	× 1000	
	× 800	12	11	× 400	
	× 200	10	9	× 100	
	× 80	8	7	× 40	
	× 20	6	5	× 10	
	× 8	4	3	× 4	
	× 2	2	1	× 1	

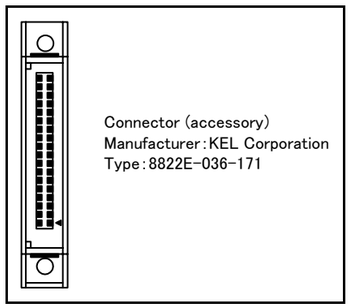
● Crimp Type Terminal



【M3Free Terminal】
・Input Unit
・Power Supply Unit
・Comparator Unit
・Analog Ouput M3 Terminal Unit

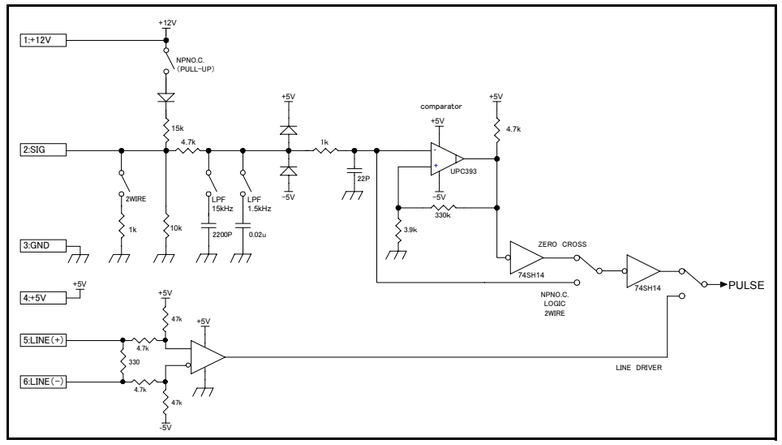


【M2Screwless Terminal】
・Analog Ouput+RS-232C Unit
・RS-485 Unit



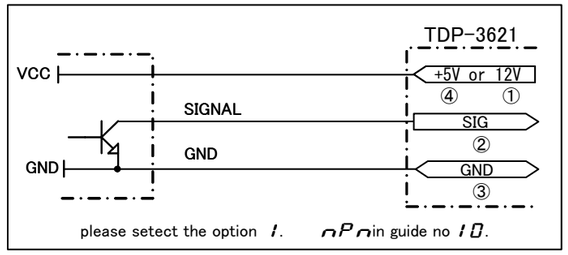
【BCD Connector】
BCD Unit

7. Input Circuit Diagram

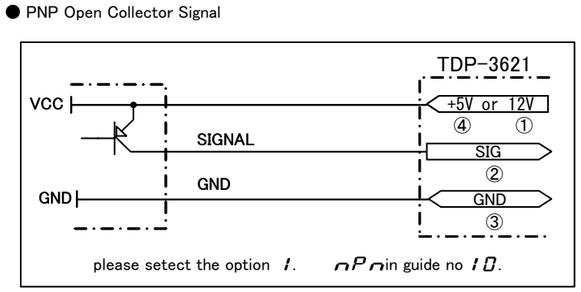


8. Input Signal Connection

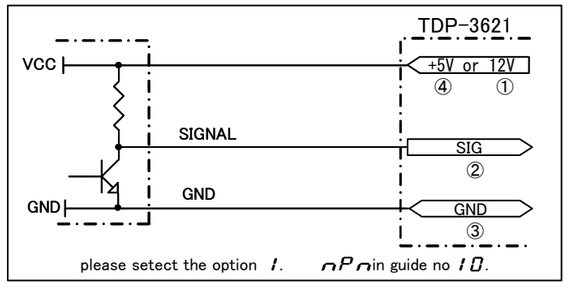
● NPN Open Collector Signal



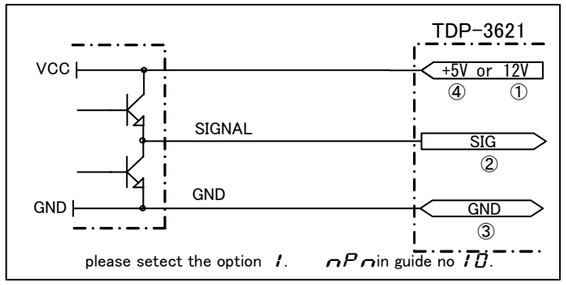
● PNP Open Collector Signal



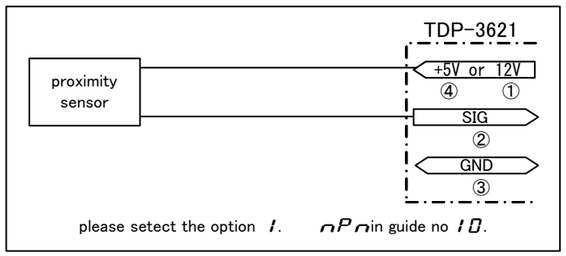
● Voltage Pulse (NPN Transistor Output) Signal



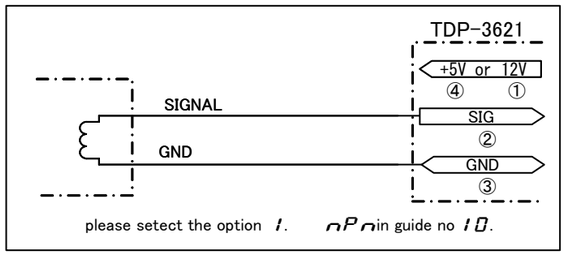
● Voltage Pulse (Logic IC Output) Signal



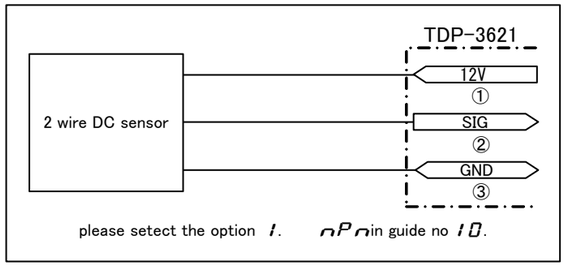
● 2 Wire Sensor



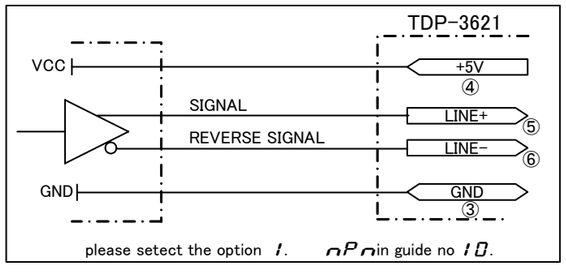
● Zero Cross Signal



● KRACHT Volume Counter



● Line Driver Signal



9. Program Mode Guide Nuember

No	Character	Title	Setting Range	Factory shipment state
About display				
01	inPt	Input frequency rate	0.00001～999999	1
02	d.SP	Display rate	0.00001～999999	1
03	dP	Display decimal point position	0 : auto range , 1～6 : setting range	0
04	dUPd	Display update time	0.1～19.9 s	0.3
05	CoLr	Display color	1 : red, 2 : green	1
About input and output				
10	.SEL	Input signals	1 : NPN open collector(SINK type) 2 : PNP open collector NPN/PNP voltage output logic IC (voltage pulse) 3 : 2 wire sensor 4 : zero cross 5 : line driver	2.LOG
11	LPF	Low pass filter	1 : None, 2 : 15kHz, 3 : 1.5kHz	1
12	d.BP	Pulse dividing	1～999	1
13	CrES	Chatter suppressing function	1 : OFF, 2 : ON	1
14	oUPd	Output updating time	0.001～19.999 (s)	0.001
15	oAAV	Output moving average	1～8	1
16	odF	Output dynamic forecast	1 : constant cycle, 2～7 (fast～slow)	4
Analog output				
20	A.SEL	Analog output option	1 : 0-10V, 2 : 0-5V, 3 : 4-20mA, 4 : 1-5V	1 : 0-10
21	A.FUL	Analog output full scale	0.00001 ～ 999999	001000
22	A.Zro	Analog output zero scale	000000 ～ 999999	0
23	OAdJ	Analog output zero adjustment	-99 ～ 99	0
Comparator output				
30	CSEL	Output setting	1 : HI、GO、LO 2 : HH、HI、GO 3 : GO、LO、LL	1
31	CHH	Comparator HH value	0.00001～999999	60000
32	CH.	Comparator HI value	0.00001～999999	50000
33	CLo	Comparator LO value	0.00001～999999	20000
34	CLL	Comparator LL value	0.00001～999999	10000
35	HYS	Hystersis	0.00000 ～ 999999	0
36	o1L	Output logic (OUT1)	1 : Positive logic, 2 : Negative logic	1
37	o2L	Output logic (OUT2)	1 : Positive logic, 2 : Negative logic	1
38	o3L	Output logic (OUT3)	1 : Positive logic, 2 : Negative logic	1
Communication (RS-232C / RS-485 common functions)				
40	bAUd	Baud rate	1 : 4.8k, 2 : 9.6k, 3 : 19.2k, 4 : 38.4k	(RS-232C) 3 : 19.2k (RS-485) 2 : 9.6k
41	dAtA	Data length	1 : 7bit, 2 : 8bit	(RS-232C) 2 : 8bit (RS-485) 1 : 7bit
42	Pb.t	Parity	1 : None, 2 : Odd, 3 : Even	(RS-232C) 1 : None (RS-485) 3 : Even No
43	StPb	Stop bit	1 : 1bit, 2 : 2bit	(RS-232C) 1 : 1bit (RS-485) 2 : 2bit
Communication (RS-485)				
44	CSUn	Check sum	1 : Nil, 2 : Yes	1 : Nil
45	UA.t	Waiting time	1ms～99ms	9ms
46	id	ID number	1～99	1
BCD Output				
50	bCdL	Output logic	1 : Positive logic, 2 : Negative logic	1
51	bCdn	BCD output mode	1 : Normal mode 2.LSD 0/1mode	1
Others				
60	Prot	Protect	1 : OFF, 2 : ON	1.OFF
61	dFLt	Factory shipment setting	1 : OFF, 2 : ON	1.OFF

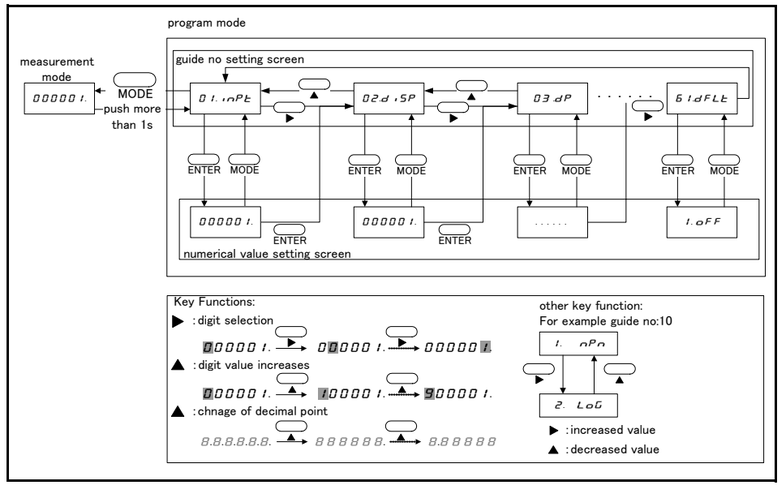
Attention

- Guide No 1 14 4～ 1 16 6: will appear when optional units are mounted on.
- Guide No 2 20 0、 2 21 1: will appear when analog output, and RS-232C unit is mounted on.
- Guide No 3 30 0～3 38 8: will appear when comparator output unit is mounted on.
- Guide No 4 40 0～4 43 3: will appear when analog output, RS-232C, and RS-485 optional units are mounted on.
- Guide No 4 44 4～4 46 6 : will appear when RS-485 optional unit is mounted on.
- Guide No 5 50 0 : will appear when BCD output optional unit is mounted on.

10. Numeric and Character Indication

0 : 0 1 : 1 2 : 2 3 : 3 4 : 4 5 : 5
6 : 6 7 : 7 8 : 8 9 : 9
A : A B : b C : C D : d E : E F : F G : G
H : H I : , J : J K : U L : L M : n N : n
O : o P : P Q : q R : r S : S T : t U : U
V : V W : J X : U Y : y Z : Z

11. Activation of Program Mode



(1) Program mode can be activated by pushing MODE key for more than 1second.
(2) Guide numbers can be selected by pushing ▶ , or ▲ key.
(3) By pushing ENTER key again the values of the guide numbers can be set.
(4) Value of the blinking digit can be changed by pushing ▲ key and next digit can be selected by pushing ▶ key.
(5) Decimal point can be selected by pushing ▶ and its position can be changed by pushing ▲ key.
(6) By pushing ENTER key the set value of guide number can be confirmed and next guide number can also be selected by pushing it again.

Attention

If you want to confirm the set value press ENTER key and press MODE key if you want to cancel it.

(7) To enter into the measurement mode press MODE key for more than 1 second.

12. Display Rate Settings

12.1. Settings of Display (Rate Matic ™)

The display of TDP-3621 is based on the adjustment of ratio between the input frequencies and the output display. The display is adjustable on the basis of this ratio or rate.

01 In put Frequency Rate
02 Display Rate
In the factory settings this rate is 000001(1:1 between input frequencies and output). However, you can set the display rate in the following range:

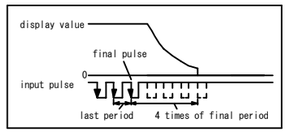
Setting range 000001 ～ 999999
Factory-set 000001

If you keep guide no 01 as 000001 than guide no 02 will show the display as 000001(1:1, i.e. factory setting).
TDP-3621 can be set as a FREQUENCY METER, FLOW METER or rpm METER. Different type of settings of output display on the basis of input frequencies can be understood from the following examples:

● Example1:
Settings of TDP-3621 as a FREQUENCY METER.
01 In put Frequency Rate = 000001
02 Display Rate = 000001
● Example2:
Settings of TDP-3621 as a rpm METER
Working principle is such that when rotary encoder sends 100 pulses (Hz)/sec to TDP-3621, it reads it as a one revolution (or 60). So the settings will be:
01 In put Frequency Rate = 000100
02 Display Rate = 000060
● Example3:
Settings of TDP-3621 as a FLOW METER.
TDP-3621 reads 1Hz(each pulse) coming from the flow sensor (0.12538ml/pulse(p)) as 0.12538 ml/s or 0.00752 l/min
01 In put Frequency Rate = 000001 (Hz)
02 Display Rate = 0.00752
or
01 In put Frequency Rate = 100000 (Hz)
02 Display Rate = 0752.28

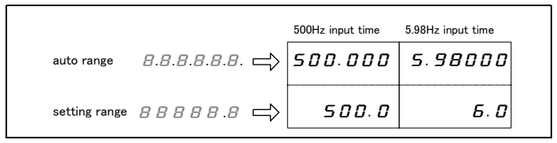
12.2.Display Setting

● Dynamic Forecast for Display
The dynamic forecast comes into play when the input frequency starts decreasing all at a sudden. In that case "Dynamic Forecast" updates the display without waiting for the following pulse on the basis of hyperbolic curve matching computation. Select the stop response from the point where the input frequencies decrease to the point where the frequencies completely stop. However, at sudden stop of input frequencies it gives zero output, which indicates that there is no risk of loss of data.
Stop forecast timing is fixed to 4 times as shown below.



For example when the final period is 0.1s (10Hz), it forecasts that it will stop after 0.1 X 4 times = 0.4s after receiving the last input pulse and analog out becomes 0%.

03 Position of display decimal point
The position of the decimal point on display can be changed within a six digit options. Hence, TDP-3621 rounds off the values less than the display range. Once the decimal point is set, it will not be affected by the variations in the input frequencies.
Automatic range consists of full six digits and can be displayed at any time because of the floating point.



[Setting range] 0 to 6
03 ～ 0
[Factory-set] 0 (automatic range)

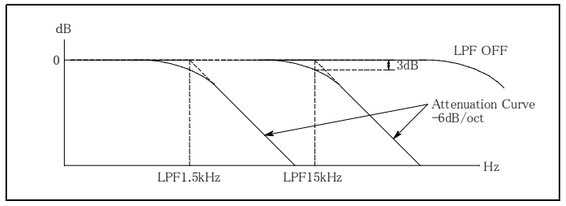
04 Updating time
Time for one gate has been set, while the tachometer displays the measurement data after averaging each gating time. User gets the moving average value of each gate.
[Setting Range] 0.1 ～ 19.9
[Factory Setting] 0.3
Example: When updating time is 00.3s.
04 ～ 00.3

05 Display color:
Display color can be switched to red or green by opting for 1 or 2 LED display options respectively.
[Setting Range] 1 : Red 2 : Green
[Factory Setting] 1

12.3.1 Input and Output Options

10 Types of the input signals
[Setting Range 1 : NPN open collector (SINK TYPE)
2 : PNP open collector (SOURCE TYPE),
NPN/PNP voltage output logic IC (voltage pulse)
3 : 2 wire sensors
4 : Zero Cross signals (alternating AC)
5 : Line driver
[Factory Setting] 2 (NPN open collector NPN/PNP logic IC-Factory setting)
Please look at **Input Signal Connection on** page 2 about connection of varying kinds of sensors and selection of the type of input signal (guide no10).

11 Low pass filter
Low pass filter can be used to attenuate high frequency noise present in the input sine or zero cross signals. A 3-notch setting of this LPF is possible as shown in the figure below. It attenuates -6dB per Octave from cut off point by increasing the frequency twice and decreasing the voltage to half.

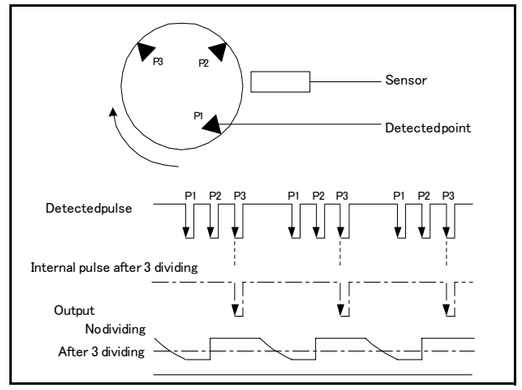


[Setting Range] 1 : Nil 2 : 15kHz 3 : 1.5kHz
[Factory Setting] 1 (NO attenuation filter is used)

Attention

● Low pass filter might attenuate the input signals when it is set to block the noise frequencies lower than the frequencies to be measured.

12 Pulse Dividing
Input pulse division software is used when the input pulses are not uniform and consists of unequal intervals especially when a flow meter sensor is used as the input pulse generator. Since it is a software pulse dividing function, it does not affect the full-scale setting regardless of the measurement frequency. For example, in below figure the pulse needs to be divided into 3 segments.



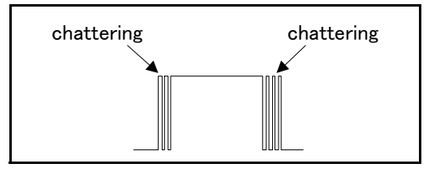
[Setting Range] 001 ～ 999
[Factory Setting] 1
[For example, when the pulse needed to be divided into 3 segments then 12 ～ 003.]

Attention

● When the pulse division (guide no 12) is set to 2 then device can not accept 1MHz input.

13 Chatter Suppressing
This software filter is used to eliminate chattering from the input frequencies. Only the signals those are stable over the period of more than 1ms can be used as an input.

When chatter suppressing is ON, high and low level of input signal is less then 1ms, then TDP-3621 does not perform any measurement. When the input signal duty 50% the maximum input frequency of TDP-3621 is 480Hz.



[Setting Range] 1 : Chatter Suppressing OFF
0 : Chatter Suppressing ON
[Factory Setting] 1

13. OPTIONAL FUNCTIONS

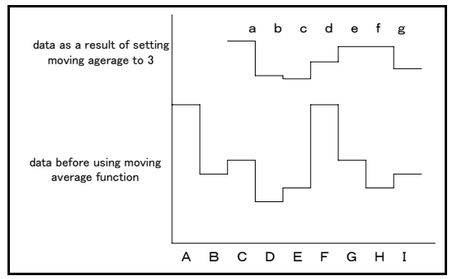
When you use the optional units then all the optional guide number appears.

14 Output Updating Time

Maximum updating time of TDP-3621 is 1ms. It calculates the period or frequency of the input pulses for each already set updating time and updates the high speed piecewise smooth output.
When the setting value of guide no4 is 100ms, the display update timing will be 100ms per cycle on the basis of "number of input pulses/100ms".
[Setting Range] 0.001 ～ 19.999
[Factory Setting] 00.001
For example the settings of 0.3 second updating time is shown below.
14 Range = 00.300

15 Moving Average

It outputs average frequency of a set number of pulses by taking into account each pulse. It takes the average of latest input frequencies by discarding the oldest ones on the basis of set moving average value without disturbing the updating time in order to give a smooth output with more information about the input frequency.
For example in below figure (b) shows the output when each frequency has been updated after every 1ms updating time. When the moving average function (15 ～ 3) is used then output signal is shown as (a). After using the moving average function the output "a" corresponds to A+B+C/3 and "b" corresponds to B+C+D/3 and so on. However, TDP-3621 takes 3ms to put "a" and afterwards it out puts "b","c" after each 1ms.



[Setting Range] 1 ～ 8
[Factory Setting] 1
(例) For example: Moving average will be set as 3 if we adjust guide no 15 as follows.

15 ～ 3

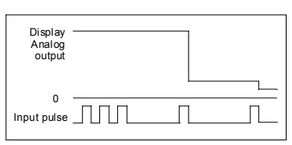
16 Dynamic Forecast TM

Dynamic Forecast comes into play when the input frequencies start decreasing all at a sudden and updates the display without waiting for the following pulse on the basis of hyperbolic curve match computation. Stop response can be set from the decrease to the point where input frequencies completely stop. It efficiently gives a zero out put when high speed input frequencies stop suddenly. It always secures the data.
[Setting Range] 1 ～ 7 ＊
[Factory Setting] 4

Setting value	X times
1. dF0	Without dynamic forecast
2. dF8	8
3. dF6	6
4. dF4	4
5. dF3	3
6. dF2	2
7. dF1.5	1.5

＊ For example:
When the set value is 2(8 times) and the final period is 0.1s(10Hz) it forecasts that the computation, after the last input pulse, will stop after 0.1 × 8 = 0.8s and will give zero analog out put.

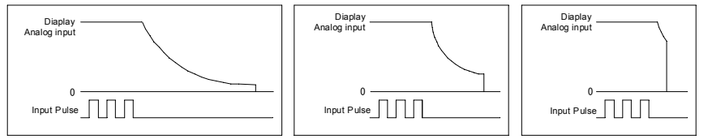
1 Conventional Periodic Computation



If you select guide no: 1 than the forecast computation doesn't work and successive pulses are needed to maintain the data for each period.

2 ～ 7 Forecast Computation with Stop Forecast

The stop Forecast(guide no 2 ～ 7) works such as explained above for guide no2, where stop Forecast functions as 8 times of the last period. If it doesn't give zero display, even the input pulses stop, in that case it enlarges the numerical value.
These functions suits to the non-stop moving objects, sensors generating irregular row pulses, and objects which output pulses with abrupt changes.



3:Stop Forecast(Low speed) 5:Stop Forecast(Middle speed) 7:Stop Forecast(High speed)

14. Analog Output (TDP-3621-E)

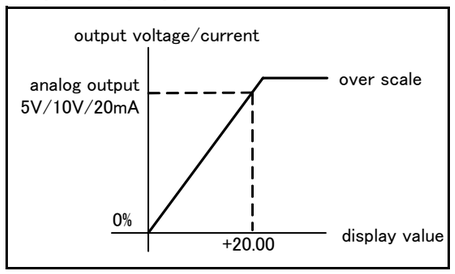
- By using the guide number 20, 21 analog output voltage or current can be obtained.
- Current and analog voltage option cannot be used as the same time.
- While using the current output option don't use the first two leads (screws) of the 232C, which may give 13V output at the same time.

20 Analog Output

By using guide no 20 the analog output in the range 0 ～ 10V, 0 ～ 5V, or 4 ～ 20mA can be obtained.
[Setting Range] 1 : 0-10V 2 : 0-5V 3 : 4-20mA 3 : 1-5V
[Factory Setting] 1 : 0-10V

21 Full Scale Analog Output

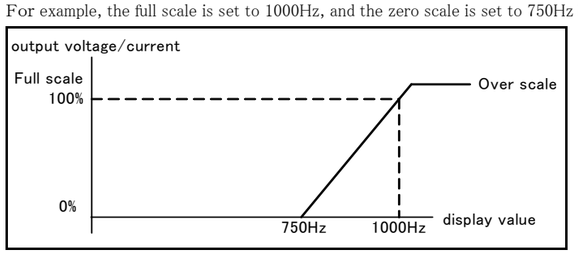
By using guide no 21 full scale value, equivalent to the selected maximum analog output value from guide no 20, can be adjusted.
[Setting Range] 0.00001 ～ 999999
[Factory Setting] 001000
For example, the maximum analog output (5V, 10V, or 20mA) equivalent to the display value 20 is shown in below figure.
21 ～ 0020.00
Example of analog output:



22 Zero Scale Analog Output

By using guide no 22 zero scale valu, equivalent to the selected minimum analog output value from guide no 20, can be adjusted.
If an adjusted span between full scale and zero scare is too close, the measured mesured value may lose the accuracy.
Zero scale can not be adjusted above Full scale.
[Setting Range] 000000 ～ 999999
[Factory Setting] 000000

For example, the full scale is set to 1000Hz, and the zero scale is set to 750Hz is shown in below figure.



23 Analog output zero adjustment

Zero output can be adjusted from 0.001% to 0.01%(approx) of the selected analog output range.
Please adjust the zero output with monitoring of the output value.

From the value of -99 to 099 can be set.
[Setting Range] -99 ～ 099
[Factory Setting] 000000

15. RS-232C Functions Settings TDP-3621-E)

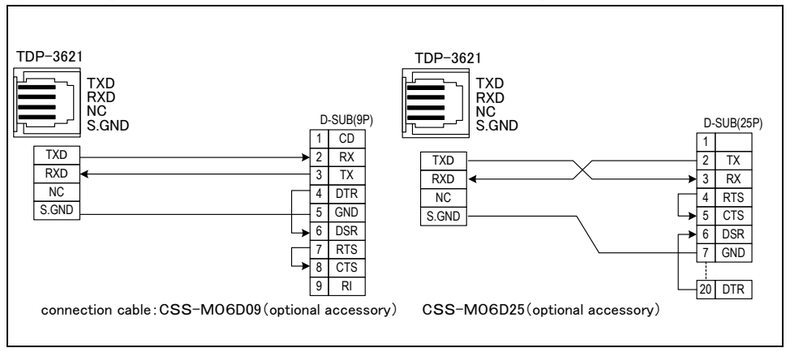
15.1. Specification for Communication

In order to use the RS-232C the knowledge of the computer programming and data communication is necessary.

Serial Communication	asynchronous communication	
Communication Level	RS-232Coffers serial communication	
Communication Code	ASCII	
Communication Parameters	Baud rate	4.8k / 9.6k / 19.2k / 38.4k
	Start bit	1 (Constant)
	Stop bit	1bit / 2bit
	Data length	7bit / 8bit
	Parity bit	None/Odd/Even
Employed Characters	0 ～ 9 A ～ Z + - , . ? C_R L_F	
	C_R	0D (HEX) Carriage Return
	L_F	0A (HEX) Line Feed

15.2.1 Cable Connection

While using RS-232C, the cable connections for two types of servers are shown below.
● D Server 9 pin (EIA-232) ● D Server 25 pin (EIA-574)



15.3. About Communication Setting

The guide numbers from 40 ～ 43 will appear only when analog output plus RS-232C or RS-485 optional units are used.

40 Baud Rate

[Setting Range] 1 : 4.8k 2 : 9.6k 3 : 19.2k 4 : 38.4k
[Factory Setting] 3 : 19.2k

41 Data Length

[Setting Range] 1 : 7bit 2 : 8bit
[Factory Setting] 2 : 8bit

42 Parity

[Setting Range] 1 : None 2 : odd 3 : even
[Factory Setting] 1 : None

43 Stop Bit

[Setting Range] 1 : 1bit 2 : 2bit
[Factory Setting] 1 : 1bit

15.4. Measurement and read out command

Measurement Mode														
detail	host command			Line	TDP-36xx response									
start of program mode	P	CR		→										
				←	O	CR	LF							
measured read out	D	R	CR	→										
				←	D	D	D	D	D	D	D	CR	LF	
read judge	R	J	CR	→	①	②	③	④	⑤					
				←	B	B	B	B	B	CR	LF			

D : 10decimal data B : 2 binary data
① Comparator HH State ② Comparator HI State
③ Comparator GO State ④ Comparator LO State
⑤ Comparator LL State

● Example1: DR Command
When DR command is entered from the host computer, TDP-3621 sends back out put (measurement value) to host computer on the basis of setting of display rate (guide no 1& 2). In case the measurement value is 1000, TDP response to DR command from the host is shown in below table.

● Example2: RJ Command

Host				TDP-3621							
D	R	CR	→								
			←	1	0	0	0	.	0	0	CR	LF

When you enter RJ command from the host computer, TDP-3621 responds in digital binary numbers.
When the comparator function is active in GO mode

When GO mode is active(ON) in the comparator operation then;

Host				TDP-3621						
R	J	CR	→							
			←	0	0	1	0	0	CR	LF

comparator LL state
comparator LO state
comparator GOstate
comparator HI state
comparator HH state

● 1 bit in binary numbers means ON and 0 means OFF, whereas positive and negative has no meaning in binary 0 or 1 state.
● You can read the comparator calculated (out put) state in host computer or by using the block terminal output of TDP-3621.

＊ Without mounting on the comparator optional unit the response data will be 00000.

15.5. Program Mode

By sending the command "P" from the host computer TDP-3621 goes into the program mode. In program mode one can read and write the values of the guide numbers.

Host			TDP-3621		
P	CR	→			
		←	O	CR	LF

O : acknowledge or confirm
Program command from host: ～ P
Response of TDP: ～ O

On entering into the program mode display ProGrm will appear.
In order to get out of the program mode and enter into the measurement mode than send command "E" from the host.

⚠ Warning

Some modules controlled by the TDP-3621 (by using BCD, analog, comparator output, RS-232C, RS-485) must be stopped before entering into the program mode because in program mode TDP-3621 does not update output.

RV Version reading command

In Program Mode																							
Contents	Host Command													Line	TDP-36xx Response								
Version reading command	R	V	CR											→									
														←	D	D	D	D	CR	LF			
Serial no reading command	R	S	CR											→									
														←	D	D	D	D	D	D	CR	LF	
Setting value reading	R	P	D	D	CR									→									
														←	D	D	D	D	D	D	D	CR	LF
Setting value writing	W	P	D	D		D	D	D	D	D	D	D	CR	→									
														←	O	CR	LF						
Program mode	E	CR												→									
Exit/terminatio														←	O	CR	LF						

D : 10 decimal data
O : acknowledge

【RV Command（Version Reading)】
When you RV command from the host, in response TDP-3621 gives the information of the version number as shown in below table.

Host				TDP-3621					
R	V	CR	→						
			←	1	.	0	0	CR	LF

Here 1.00 is the program version of the device.

【RS Command（Serial number reading)】
When you send RS command from the host, in response the TDP-3621 gives the serial number of the device as shown in the below table.

Host				TDP-3621							
R	S	CR	→								
			←	1	2	3	4	5	6	CR	LF

Here 123456 is the serial number of the device.

【W P, RP Program writing and Reading command】
● WP Command
By using the WP command values of the guide numbers can be changed.
Example: Below table indicates the change of value of (settings) the guide number 01 input (input frequency rate) to 3600.

space or comma can be used.

Host											TDP-3621		
W	P	0	1		3	6	0	0	CR	→			
										←	O	CR	LF

setting guide no
input display setting value

The device sends [O] back to the host computer in response to confirm that the above change has been made to guide no 1

In case the new value of the guide number has not been entered properly than the TDP-3621 will send back ? in response as shown in below table.

	TDP-3621		
←	?	CR	LF

● RP Command
By sending the RP command from the host computer you can confirm the changes made in the values of different guide numbers.
Example: Below table shows the response of TDP-3621 when RP 01 command is sent from the host computer to confirm the value of input frequency rate.

Host						TDP-3621									
R	P	0	1	CR	→										
					←	1	0	0	.	0	0	0	CR	LF

setting guide no

TDP-3621 responds in 7 digit data as a confirmation that the values of the guide numbers have changed.

【Exit from program mode】
When you send command "E" from the host, PROGRM will disappears from the display and TDP-3621 enters into the measurement mode.

Host			TDP-3621		
E	CR	→			
		←	O	CR	LF

TDP-3621 sends back command "O" to the host computer to confirm that now measurement mode can be used as shown in the table below.

16. Comparator Output (TDP-3621)

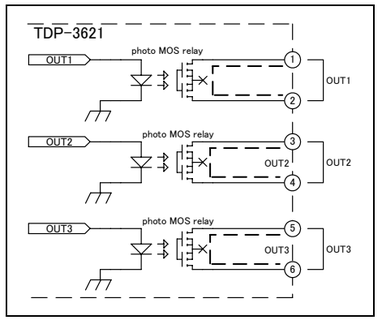
The guide no 30 ～ 38 appear only when comparator optional unit is built in TDP-3621. Guide no 30 gives a three comparator output optional modes.
By selecting any mode amongst these three options one needs to set only two values (HH & LO i.e. high and low) as the range of comparator output and than TDP-3621 automatically define the zones for HH or HI and as well as for GO.

		Terminal Block		
		1-2	3-4	5-6
		OUT1	OUT2	OUT3
Guid No.30	1	HI	GO	LO
	2	HH	HI	GO
	3	GO	LO	LL

.
Comparator output can be confirmed by looking at the comparator LED display for HH, HI, or GO etc. The comparator output is independent of each other, for example the low value of the HI than LO does not affect the output.

16.1.Comparator Output Ciruit

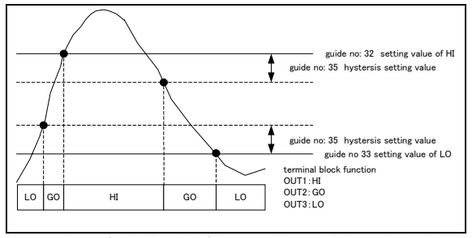
TDP-3621 offers three types of BCD output options (guide no 30) by utilizing Photo Moss Relay as shown in below figure. When the comparator function is ON, TDP-3621 offers below 50Ω resistance at the time of out put.



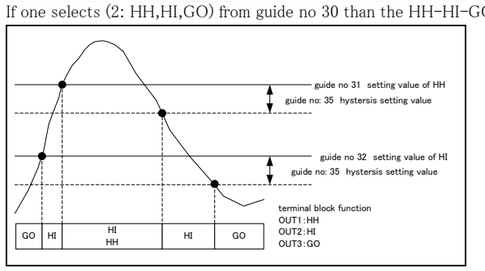
The output updating time for TDP-3621 is 1ms, but as a whole it takes maximum 3ms from input signal to out put display.

16.2.Comparator Operation

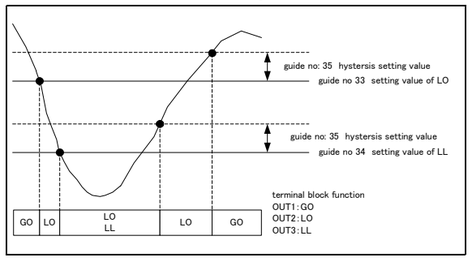
If one selects (1: HI,GO,LO) from guide no 30 than the comparator out put zone HI-GO-LO will be as shown blow.



If one selects (2: HH,HI,GO) from guide no 30 than the HH-HI-GO zone will be as shown blow.



If one selects (3: GO,LO,LL) from guide no 30 than the GO-LO-LL zone will be like shown blow.



16.3. Comparator Output Settings

30 Output Setting

Guide no 30 offers following three output options.

[Setting Range] 1 : HI、GO、LO 2 : HH、HI、GO 3 : GO、LO、LL

[Factory Setting] 1

31 Comparator HH Value Settings

This guide no enables us to set the HH comparator value as well as the decimal point value. The comparator functions come into action when the display value is achieved.

[Setting Range] 0.00001 ～ 999999

[Factory Setting] 60000

32 Comparator HI Value Settings

By using this guide no one can set HI comparator value and the decimal point. Comparator functions come into action when display value is achieved.

[Setting Range] 0.00001 ～ 999999

[Factory Setting] 50000

33 Comparator LO Value Settings

Setting of LO comparator value and the decimal point value is possible by using the guide no33. Comparator functions come into play when the display value is achieved.

[Setting Range] 0.00001 ～ 999999

[Factory Setting] 20000

34 Comparator LL Value Settings

The setting of LL comparator value and the decimal point is possible in this guide no. The comparator functions come into play when the display valued is achieved.

[Setting Range] 0.00001 ～ 999999

[Factory Setting] 10000

35 Hystersis

If the output has high fluctuations (sudden ON/OFF) then hystersis is sued to get a stable and fluctuation free out put data.

If we set hystersis value for one comparator value then it also includes other values as well (HI-GO-LO).

[Setting Range] 0.00001 ～ 999999

[Factory Setting] 000000.

36 Out1 Output logic setting

37 Out2 Output logic setting

38 Out3 Output logic setting

The setting of the comparator output logic is possible.

[Setting Options] 1 : Positive Logic, 2 : Negative Logic

[Factory Setting] 1

Example) Output Logic Setting

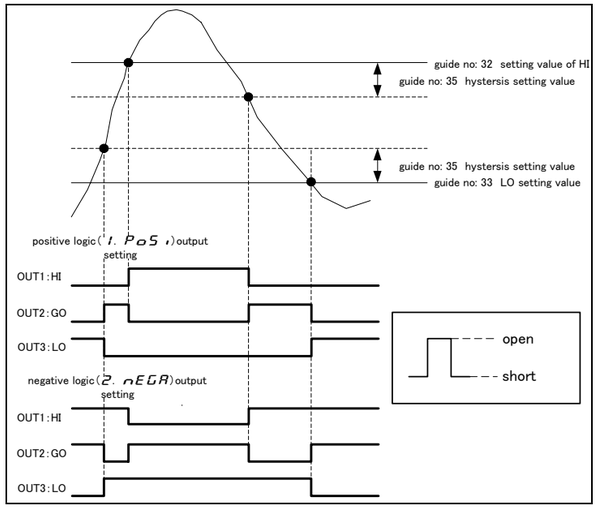
● Positive Output Logic setting

The comparator action becomes active when the comparator setting values (HH, HI, LO etc) are reached than the resistance of the corresponding block terminal becomes 50Ω.

● Negative Output Logic setting:

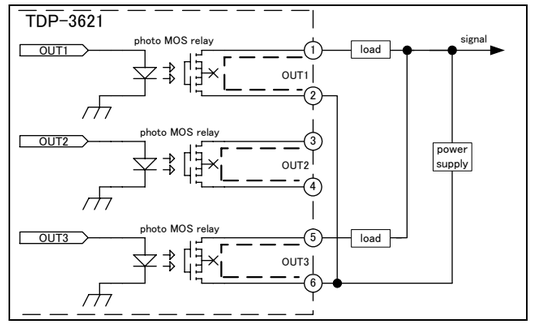
Negative output logic setting is opposite to that of positive output logic setting.

Example: when the settings of guide no 30 1: HI-GO-LO



16.4. OR Function

When the comparator output setting is HI-GO-LO and the connections are as shown in below figure then HI,LO both can give output.



17. RS-485 Communication (TDP-3621-S)

The knowledge of computer programming and data communication is necessary to use RS-485.

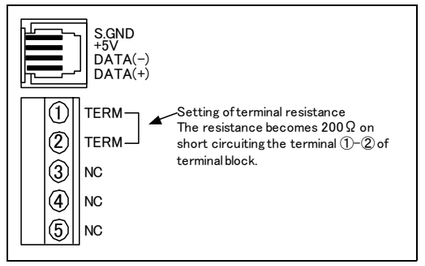
Attention

In order to have an effective response of RS-485 communication option the multi drop connection is necessary to be used. If you use RS-232C ⇔ RS-485 converter or RS-485 PC card COCORESEARCH can not provide any technical support.

17.1. Cable Connection

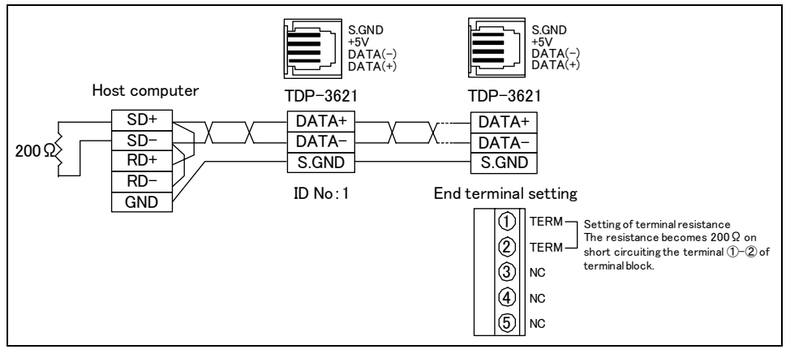
By using multi drop connection maximum 32 TDP-3621 can communicate with programmable controller (PLC) and personal computer (PC).

● Set the terminator connection. The terminator setting of the TDP-3621 is shown below.



Attention

Attention: For proper communication please set same values of concerned guide numbers.



17.2. Communication Contents:

Read out of data (measured value), read out of comparator calculated (output) state, read out of values of guide numbers in program mode, and setting of the values of guide numbers is possible.
By using PC-1 (protocol converter) data can be transferred to PLC (A, Q, FAX series)
Don't use analog out put and RS-485 units simultaneously.

Setting of communication:
The guide numbers: 44 ～ 46 will appear when RS-485 optional unit is used.
The guide numbers from 40 ～ 43 will appear only when analog output plus RS-232C or RS-485 optional units are used.
Please make same setting for communcation parameters (guide no 40～46)while using the multidrop connection.

40 Baud Rate
[Setting Option] 1 : 4.8kbps 2 : 9.6kbps 3 : 19.2kbps 4 : 38.4kbps
[Factory Setting] 2 : 9.6kbps

41 Data Length
[Setting Option] 1 : 7bit 2 : 8bit
[Factory Setting] 1 : 7bit

42 Parity:
[Setting Option] 1 : Nil 2 : Odd Number 3 : Even Number
[Factory Setting] 3 : Odd Number

43 Stop Bit
[Setting Option] 1 : 1bit 2 : 2bit
[Factory Setting] 2 : 2bit

44 Check Sum
Setting of check sum option (error detection) is possible.
In case we select option2 of check sum guide no 44, TDP-3621 returns [?] if there is any check sum error.
[Setting Option] 1 : Nil 2 : Yes
[Factory setting] 2 : Yes

45 Waiting Time
It is the time interval between TDP-3621 receives LF command from the host and before it responds. Waiting time is set to avoid any collision of data transmitted from the PC and TDP-3621.
[Setting Option] 1 ～ 99ms
[Factory Setting] 9ms

46 ～ ID Number
This is the ID number of TDP-3621. By selecting same ID nos of different TDP-3621 communication is not possible but with different ID nos communication is possible.
[Setting Option] 1 ～ 99
[Factory Setting] 1

17.3. Realization of RS-485 Communication

● Host Computer → TDP-3621 ● TDP-3621 → Host Computer (OK Response)

ENQ	0	1	CR	LF
05H	30H	31H	0DH	0AH

No check sum access

ACK	0	1	CR	LF
06H	30H	31H	0DH	0AH

No check sum access

● TDP-3621 → Host Computer (Error Response)

STX	?	ETX	4	2	CR	LF
02H	3F	03H	34H	32H	0DH	0AH

Appear/exist when check sum is used

17.4. Termination of Communication

EOT	CR	LF
04H	0DH	0AH

No check sum access

EOT command terminates the communication but tachometer doesn't respond to PC.
Before changing the ID no of the TDP-3621 to change the communication between PC and tachometer please first send EOT command to terminate the existing link otherwise the existing communication will automatically be terminated.

17.5. Data Reception (Host Computer → TDP-3621)

STX	Command	ETX			CR	LF
02H		03H			0DH	0AH

Appear/exist when check sum is used

ommunication commands are same to that of RS232C.
To use the commands please see page? (Please consult the commands of RS-232C (TPD-3621E))

17.6. Data Transmission (TDP-3621 → Host Computer)

● OK Response

STX	O	ETX	8	2	CR	LF
02H	7F	03H	38H	32H	0DH	0AH

Appear/exist when check sum is used

● Error Response

STX	?	ETX	4	2	CR	LF
02H	3F	03H	34H	32H	0DH	0AH

Appear/exist when check sum is used

● Data Length

STX	Data	ETX			CR	LF
02H		03H			0DH	0AH

Appear/exist when check sum is used

Example: Response of measurement value of 100kHz is shown below.

STX	1	0	0	0	0	0	0	.	ETX	8	2	CR	LF
02H	31H	30H	30H	30H	30H	30H	30H	2EH	03H	38H	32H	0DH	0AH

Appear/exist when check sum is used

17.7. Check Sum

Check sum becomes like shown below.

STX	1	0	0	0	0	0	.	ETX	5	2	CR	LF
02H	31H	30H	30H	30H	30H	30H	2EH	03H	35H	32H	0DH	0AH
	①	②	③	④	⑤	⑥	⑦	⑧				

At the time of check sum H=①～⑧; higher 4 bit of low 8 bit
31H+30H+30H+30H+30H+30H+2EH+03H=1 **5** 2
At the time of check sum L=①～⑧; lower 4 bit of low 8bit
31H+30H+30H+30H+30H+30H+2EH+03H=1 5 **2**

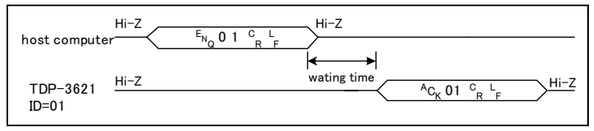
17.8. Control Code

$^{S}T_{X}$	02 (HEX)	Start of TeXt
$^{E}T_{X}$	03 (HEX)	End of TeXt
$^{E}N_{Q}$	05 (HEX)	ENQuiry
$^{A}C_{K}$	06 (HEX)	ACKnowledge
^{L}F	0A (HEX)	Line Feed
^{C}R	0D (HEX)	Carriage Return

Warning

Some modules controlled by the TDP-3621 (by using BCD, analog, comparator output, RS-232C, RS-485) must be stopped before entering into the program mode because in program mode TDP-3621 stop output.

17.9. Communication Timing



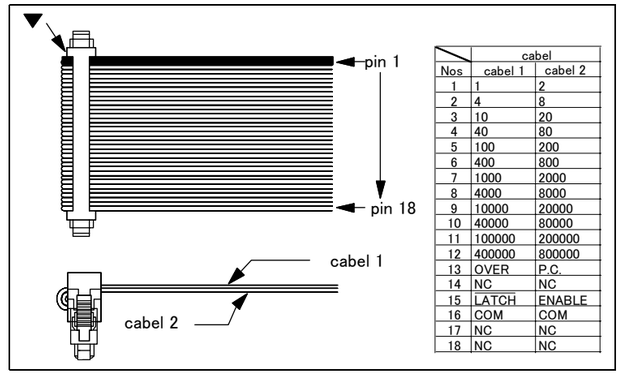
Please set the wait time using guide no 45 in program mode.

18. BCD Output Functions (TDP-3621-P, TDP-3621-T)

Knowledge of digital signal processing is necessary to use BCD output option. When power supply to TDP-3621 is switched ON then BCD output gives arbitrary values (data). First switch ON the power supply of TDP-3621 and then activate the module that uses the BCD output.

18.1. Connection Technique

【Connector】(accessories)
Type: 8822E-036-171 manufacturer: KEL Corporation
【Connection technique of accessory connector is shown below】



Nos	cabel 1	cabel 2
1	1	2
2	4	8
3	10	20
4	40	80
5	100	200
6	400	800
7	1000	2000
8	4000	8000
9	10000	20000
10	40000	80000
11	100000	200000
12	400000	800000
13	OVER	P.C.
14	NC	NC
15	LATCH	ENABLE
16	COM	COM
17	NC	NC
18	NC	NC

OPTIONAL: A highly relaiable optional BCD cable connected with its connector is available.
Features of the cable are same as shown in the above figure and length of the cable is 2m.
Type: CSS-BCD-2 Cable length : 2m

Pin No	Signal Name	Logic	
		TDP-3621-P (NPN open collector output)	TDP-3621-T (CMOS、TTL output)
1～24	×1～×800000	0 : OFF 1 : ON	0 : LOW 1 : HIGH
25	OVER	over flow time ON	over flow H level
26	P.C.	＊after updating output ON	＊after updating output HIGH
29	LATCH	Short COM and ENABLE	
30	ENABLE	Short COM and ENABLE terminal gives no BCD output signal (OFF)	Short COM and ENABLE terminal gives no BCD output signal (Hi-Z)
31、32	COM	COMMON	

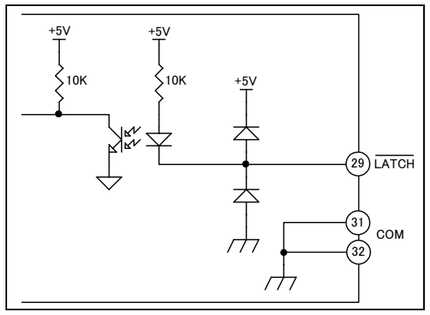
The above table setting is valid when positive logic is selected in guide no .
Logic of P.C. signal remains unaffected if the value of the guide no 50 is changed.
＊Please refer to the timing chart of pulse width of P.C. signal (article:18.4).

Attention

When the BCD output value reaches the over scale then at 999999 logic of the OVER pin 25 will change (e.g. +ive logic into -ive logic).

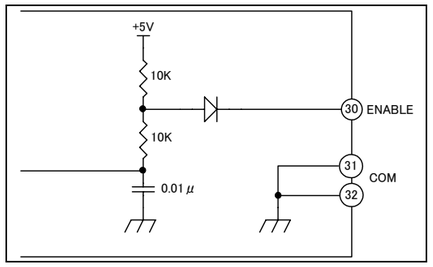
18.2. Input Option

● LATCH



When the COM and LATCH pins are short-circuited then LATCH becomes active and LATCH the data (update stops functioning)

● ENABLE



If COM and ENABLE pins are short-circuited, NPN open collector is OFF, and TTL becomes of high impedance (no output). At the time of using daisy chain connection, short circuit all the ENABLE and COM terminals except one (open circuit), which will give out put. (For details of daisy chain connection see 18.8).

18.3. Output Option

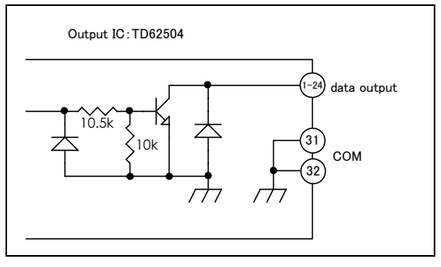
● Open Collector Option

l Open Collector Option:

Rating: Applied Voltage 30V(max) Out put current: 10mA (max)

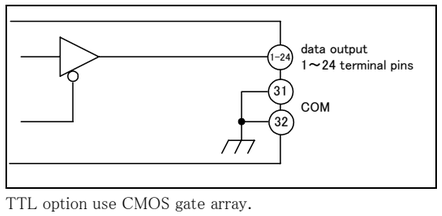
Characteristics: Out put residual voltage: less than 1.2V

☆ PLC etc, photo coupler input circuits are in conformity.



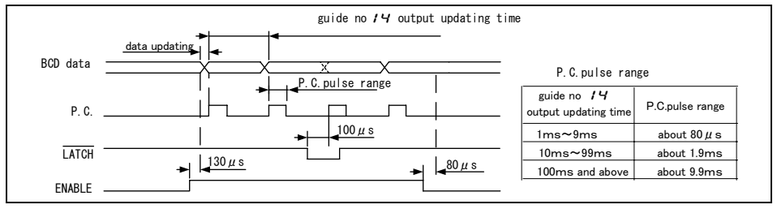
● TTL Option

Rating: Fan Out 2 ＊primarily computer etc, CMOS/TTL input circuit are in conformity.



TTL option use CMOS gate array.

18.4. Output Timing Chart



P.C.pulse range

guide no 14 output updating time	P.C.pulse range
1ms～9ms	about 80 μs
10ms～99ms	about 1.9ms
100ms and above	about 9.9ms

18.5. BCD Output Program Setting No

Guide No	Explanation	Setting Rage	Remarks
3	Display decimal point position	0～6	0: Autorange
			1～6:Setting range
14	Output update time	0.001～19.999	(s)
15	Output moving avergae	1～8	(Singly)
16	Output dynamic forecast	1～7	1: Fixed cycle
			2～7:Slow～Fast
50	Output logic	1～2	1:Positive logic
			2:Negative logic

＊P.C. (PC signal) doesn't have any decimal data.

Please set the value of static range by using the guide no3 (don't use auto range)

50 Output Logic

＊In guide no 50; the standard option of logic is TTL. When you opt for NPN open collector output option then choose option 2, negative logic, of guide no 50.

[Setting Option] 1 : Positive logic, 2 : Negative logic

[Factory Setting] 1

51 Output Logic

Please set to MODE 1.

MODE 2 is not for general purposes.

18.6. BCD Output Resolution

Out put resolution can be understood from below examples.

Example1:

Out put updating time (guide no14) = 1ms

Moving average value (guide no15) = 1

Resolution = (1 ms X 1)/40ns

= 25000

Where 40ns (25MHz) is input resolution.

Example2:

Output updating time (guide no14) = 10ms

Moving average value (guide no15) = 8

Resolution = (10 ms X 8)/40ns

= 2000000

Hence BCD output resolution is ～ 2000000

18.7. Read Out Timing of the BCD Data

As soon as the BCD data is updated we get output P.C. signal ON (High). Please read the BCD output data when P.C. signal is ON (High). Length scale of P.C. pulse is shown in [18.4 Out Put Timing Chart]

Other techniques are explained below.

(1) LATCH as an input

When LATCH is used as an input, BCD update stops, at that time read the value of BCD data. This technique is used when it takes long time to read BCD data. Please consult [18.4 Out Put Timing Chart] to understand the LATCH time.

(2) Continuous data reading by comparing 2 consecutive values

Please continuously read and compare the consecutive values and if the 2 consecutive values are same you will get BCD output data otherwise read again.

Set the output update timing (guide no 14) in such a way that you should be able to read BCD data twice in that time interval.

(3) Use of LATCH on PC signal

BCD data can be read by using LATCH on the rising or falling edge of the PC signal. However, it recommended to use LATCH at the falling edge of the PC signal.

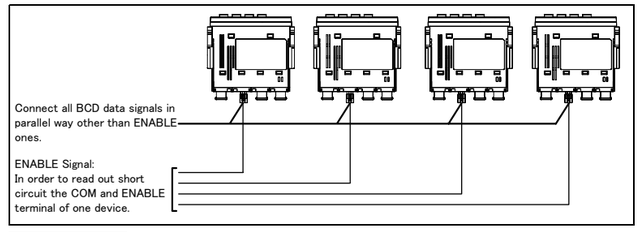
18.8. Daisy Chain Connection

If COM and ENABLE pins are short-circuited, NPN open collector is OFF, and then TTL shows high impedance (no output). At the time of using daisy chain connection, short circuit all the ENABLE and COM terminals except one (open circuit), which will give output.

SHORT: DISABLE

OPEN: ENABLE LOW : DISABLE (High impedance) HIGH : ENABLE (Output)

Connection example



When LATCH and COM terminals are short then BCD output data will not be updated.

19. specifications

Name	Universal Periomatic Tachometer
Model	TDP-3621
Principle of Measurement	PERIOMATIC TM Technique

【Input Unit】

No of inputs	1
Input frequency range	6mHz ～ 500kHz
Input Resolution	40ns (25MHz)
Input Signal	① Single-end input NPN Open Collector、 Logic、 Zero cross、 2 Wire sensor ② Line Driver Input Line driver
Input type	Single phase pulse
Input Level	① Logic Signal (NPN open collector、 logic、 2 Wire sensor) ・6mHz ～ 250kHz H level 3.9V and above L level 1V and below ・250kHz ～ 500kHz H level 4.4V and above L level 0.7V and below ② Zero cross signal Alternating ± 60mV or above signal that repeats itself about 0V ③ Line deriver Signal ± 1V and above (Differential Voltage)
Input Resistance	① NPN Open Collector Pull down to GND at about 15kΩ Pull down to GND at about 10kΩ ② Logic Pull down to GND at about 10kΩ ③ Zero cross Pull down to GND at about 10kΩ ④ 2 wire sensor Pull down to GND at about 900Ω ⑤ Line deriver Input Resistance 330Ω
Input Voltage Endurance	① NPN Open Collector、 Logic ± 50V ② Zero Cross ± 70V ③ 2 Wires Sensor ± 30V ④ Line Deriver ± 25V (Differential Voltmeter)
Input pulse width	0.9μs and above (Both H level、 L level)
Trigger edge	Falling Edge
Low pass filter	LPF Circuit 15kHz (-3dB,-6dB/oct) 1.5kHz (-3dB,-6dB/oct))
Input Connector	M3 Free Terminal Screw Fork Tongue Connector : 5.8mm and below
Power Supply for Sensor	DC12V ± 10% Max Load : 100mA DC5V ± 10% Max Load : 150mA

【Display Unit】

Display	Red/Green 7 digit LED
Display digit	6 digit
Characters Hieght	About 20mm
Display Lamp	Input signal trigger : P1 Blinks when input pulse applied (Lights up if frequency is high) Comparator Indicators : HH/HI/GO/LO/LL
Display Span	0.00001 ～ 999999
Decimal Point Position	Auto range 0 : □ . □ . □ . □ . □ . □ . Fixing Range 1 : □ □ □ □ □ □ . ～ 6 : □ . □ □ □ □ □
Zero Display	Rating zero supress
Over Display	OL Display
Display Update Time	0.1 ～ 19.9s
Display Moving Average	1 ～ 8
Display Accuracy	± 20ppm ± 1digit @ 23℃

【Measurement and Operation】

Measurement Mode	Frequency Meter
Scalling	Rate Matic ™
Calculation Rate	Display rate on the basis of input frequency: Input Frequency Rate : 0.00001 ～ 999999[Hz] Display Rate : 0.00001 ～ 999999
Pulse dision (pulse averaging)	1 ～ 999
Output moving average	1 ～ 8
Dymanic Forecast	Display : 4 time of last period Output : 7 Options (including no forecast option)
Chatter Suppress	Input frequency uppermost limit : 480Hz chatter suppressing is ON, High and low level of input signal is less then 1ms.
Output updating time	0.001 ～ 19.999s
Setting value memory	(EEPROM) 1 million times write and erase capability.

【General Information】

Power Supply Voltage	AC Power source specifications AC100 ～ 240V ± 10%(50Hz/60Hz) DCPower source (Option) DC12 ～ 48V ± 10%
Isolation	Signal input / 各 Optional Unit / Electric Input / Case
Voltage Endurance	AC Power source specifications Electric Supply(Input/Comparator Output/All Other Output Units) AC1500V 1min Input- Comparator Output/All Other Output Units DC500V 1min Comparator Ouput-All Other Output Units DC500V 1min Case-Poer Supply/Input/Comparator Output/All Other Output Units AC1500V 1min DC Power Supply Specifications Power Supply-Input/Comparator Output/All Other Output Units DC500V 1min Input- Comparator Output/All Other Output Units DC500V 1min Comparator Output-All Other Output Units DC500V 1 min Case-Power Supply/Input/Comparator Output/All Other Output Units AC1500V 1min
Insulation Resistance	Withstand voltage test terminal : DC500V 100MΩand above
Power Requirements	AC power specification 100V : 17VA and below 200V : 21VA and below 240V : 23VA and below DC power specification 11VA and below
Dimensions	48mm(H) × 96mm(W) × 99.5mm(D) (analog output unit implementation) DIN Standard
Weight	about 250g
Operating ambient atmosphere	no corrosive gas
operational surrounding temperature and humidity)	0 ～ 50℃ 35 ～ 85%RH (no dewing
storage surrounding temperature and humidity)	- 10 ～ +70℃ 60%RH and below (no dewing)

【Option】

【Comparator Output】

Setting Digits	6 digits
decimal point	□ □ □ □ □ □ . ～□ . □ □ □ □ □
Output Digit	3 digits ① HH/HI/GO ② HI/GO/LO ③ GO/LO/LL (select 1 amongst 3 options)
Output Type	Isolation Type Non Contact Output (Photo MOS raley)
Output Rating	DC350V 80mA and below, (Resistance Load) AC240V 80mA and below, (Resistance Load)
ON Resistance	50Ω and below
Output Logic	Positive/Negative Logic
Response Time	3ms (max) Input Pulse → Max Comparator Output Delay
Output Terminal	M3 Free Terminal Screw Connector : 5.8mm and below

【Analog Output】

Output Signal	0 - 10V 0 - 5V 1 - 5V 4 - 20mA (select 1 amongst 4 options)
Output accuracy	Voltage Output ± 0.1% of full scale @23℃ Current output ± 0.2% of full scale @23℃
Load Resistance	Voltage output:4.7kΩ and above Current Output: 510Ωand below
D/A Conversion	DAC
Output Resolution	16bit (resolution for any range is above 50,000)
Delay Time	2.5ms Input Pulse → Maximum Delay of Analog Output
Output Rate	Full Scale is set according to the display unit
temperature fluctuations	± 200ppm/ ℃ and below
Linearity	± 0.1% and below
Ouput Connector	M 2 Screw Terminal Block

【BCDOuput】

Signal types	TDP-3621-P (open collector) TDP-3621-T (TTL、 CMOS)
Output type	Parallel BCD Output
Output signal	6digit BCD code OVER (Over flow) P.C. (Print Controller)
Control signal	LATCH (LATCH input) ENABLE (signal output and control input) P.C. (print controller)
Output logic	Positive / Negative logic
Response time	3ms (max) maximum delay from pulse input → data output
Rating	① Open collector Voltage resistance : DC30V and below Allowed current : 10mA and below (Ouput Saturation Voltage 1.2V and below) ② TTL Fan out 2
Ouput connecter	1.27mm Pitch 2 Piece Connector Type : 8831E-036-170L Manufacturer : KEL Corporation

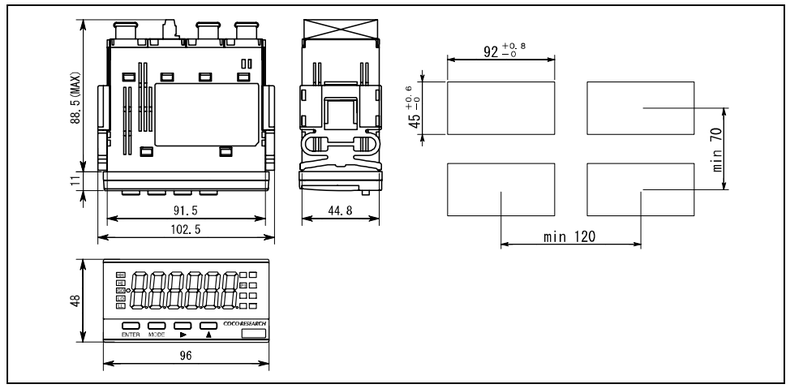
【RS-232C】

Communication Method	Asynchronous Communication Method
Baud Rate	38.4kbps / 19.2kbps / 9.6kbps / 4.8kbps
Start Bit	1bit
Data Length	7bit / 8bit
Parity	Even / Odd / None
Stop Bit	1bit / 2bit
Character Code	ASCII Code
Use Character	0 ～ 9 / CR / LF
Communication Connector	RJ-11 6 pins with data on 4 pins modular jak

【RS-485】

Communication Method	Asynchronous Communication Method
Communication Mode	Multi Drop Serial Communication
Number of Connection	Max 31 in Number
Boud Rate	38.4kbps / 19.2kbps / 9.6kbps / 4.8kbps
Start Bit	1bit
Data Length	7bit/8bit
Parity	Even/Odd/None
Stop Bit	1bit/2bit
Character Code	ASCII Code
Error Detection	Check Sum
Strip line	Max Length 500m
Communication Connector	RJ-11 6 pins with data on 4 pins modular jak

20. Dimensional Outline Drawing 、 Panel Cut Dimensions Drawing



Recommended panel thickness is from 0.8mm ～ 5mm.

COCO RESEARCH

Tokyo Office Shin-Nakano Cocoresearch Building
3-40-4, Chuo, Nakano-ku
Tokyo 164-0011, JAPAN
Tel: (81)3-3382-1021
Fax: (81)3-3382-1200

Osaka Branch Okuuchi Itachibori Building, 10th Floor
4-7-15, Itachibori, Nishi-ku
Osaka 550-0012, JAPAN
Tel: (81)6-6538-1981
Fax: (81)6-6538-8481

URL http://www.cocores.co.jp

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